

REMARKS

Claims 1-4 and 6-8 are pending in this application. By the Office Action, claim 5 is objected to; claims 1-7 are rejected under 35 U.S.C. §112; and claims 1-8 are rejected under 35 U.S.C. §102(e) and §103. By this Amendment, claims 1 and 4 are amended and claim 5 is canceled. Support for amended claim 1 can be found in the specification as originally filed, such as at page 6, lines 22-27 and page 7, lines 26-34. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

I. Objection to Claim 5

Claim 5 is objected to as being of improper dependent form. Without conceding the propriety of the objection, claims 1 and 4 are amended and claim 5 is canceled herein.

Reconsideration and withdrawal of the objection are respectfully requested.

II. Rejection Under §112

Claims 1-7 are rejected under 35 U.S.C. §112, second paragraph, as being indefinite. By this Amendment, claim 1 is amended to clarify the claim language. Reconsideration and withdrawal of the objection are respectfully requested.

III. Rejections Under 35 U.S.C. §102 and §103

A. Nishimura

Claims 1-8 are rejected under 35 U.S.C. §102(e), or alternatively under 35 U.S.C. §103(a), over Nishimura. Applicant respectfully traverses the rejection.

Independent claim 1 is directed to a process of producing a circularly-polarized-light-separating element, comprising: a first step of applying, to a substrate having alignment power, a cholesteric liquid crystal solution prepared by dissolving a radiation-polymerizable cholesteric liquid crystalline material in a solvent, thereby forming a film; a second step of removing the solvent from the film formed in the first step by heating the film beyond its

phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film; and a third step of supercooling the uncured cholesteric liquid crystal film beyond its phase transition temperature, and applying, for curing, radiation to the uncured cholesteric liquid crystal film formed in the second step, while holding a phase of this film to a supercooled cholesteric one, thereby obtaining a cured cholesteric liquid crystal film. Such a process is not taught or suggested by Nishimura.

According to the claimed invention, the process includes, *inter alia*, two distinct steps. In the second step, the solvent is removed from the film formed in the first step by heating the film beyond its phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film. In the third step, the uncured cholesteric liquid crystal film is supercooled beyond its phase transition temperature. As a result of these two steps, in combination with the other claimed process steps, it is possible to cure a cholesteric liquid crystal film, while effectively preventing an increase in the number of three-dimensional cross-links between liquid crystalline molecules in the cholesteric liquid crystal film, or an increase in the magnitude of thermal fluctuation of the liquid crystalline molecules. That is, the claimed process effectively prevents the cholesteric structure from being disordered. See, for example, the specification at page 4, lines 16-35.

Nishimura discloses a method for manufacturing a polarization diffraction film, which comprises the steps of forming a film with a liquid crystal material containing a liquid crystalline polymer and a crosslinkable substance, fixing a cholesteric alignment formed with the liquid crystal material, crosslinking the liquid crystal material to form a liquid crystal film and providing a region exhibiting a diffraction-capability on at least a part of the liquid crystal film or polarization diffraction film or comprises the steps of forming a film with a liquid crystal material containing a polymeric liquid crystal and a crosslinkable substance, crosslinking the liquid crystal material in a cholesterically aligned state so as to form a liquid

crystal film with a cholesteric alignment fixed and providing a region exhibiting a diffraction capability on at least a part of the liquid crystal film. Nishimura at Abstract.

In contrast to the claimed invention, Nishimura fails to disclose, teach or suggest the combination of steps of heating the film beyond its phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film, followed by supercooling the uncured cholesteric liquid crystal film beyond its phase transition temperature and applying, for curing, radiation to the uncured cholesteric liquid crystal film, as claimed. Instead, Nishimura in fact teaches that "the light irradiation may properly be conducted after reheating the coat layer so as to impart the fluidity thereto because of the low cross-linking rate of the liquid crystal layer." See Nishimura at col. 14, lines 11-16 (emphasis added).

Thus, Nishimura not only fails to teach or suggest the particular limitations of claim 1, but in fact teaches directly the opposite. That is, while the claimed invention performs the radiation curing to the uncured cholesteric liquid crystal film in the supercooled state, Nishimura teaches light irradiation after reheating the coat layer so as to impart the fluidity to the coat layer. Nishimura does not teach or suggest that light irradiation could or should be conducted when the uncured cholesteric liquid crystal film is in the supercooled state.

As Nishimura fails to teach or suggest each and every feature of claim 1, Nishimura does not anticipate and would not have rendered obvious the subject matter of claim 1. Claims 2-4 and 6-8 depend from claim 1 and, thus, also are not anticipated and would not have been rendered obvious by Nishimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

B. Kawamoto, Nishimura, and Gibbons

Claims 1-8 are rejected under 35 U.S.C. §103(a) over Kawamoto, in view of Nishimura, and further in view of Gibbons. Applicant respectfully traverses the rejection.

Claim 1 and Nishimura are discussed in detail above. The Office Action asserts that Kawamoto discloses all of the limitations of the claimed invention, except (1) that the liquid crystal polymer is a photopolymerizable polymer which is cured at room temperature, and (2) forming a second cholesteric liquid crystal polymer layer on the cured cholesteric liquid crystal polymer layer. The Office Action then cites Nishimura as above, for teaching that it is known to cure a photopolymerizable polymer at room temperature, and cites Gibbons for teaching forming a second cholesteric liquid crystal polymer layer on the cured cholesteric liquid crystal polymer layer.

However, regardless of the actual teachings of Kawamoto, Nishimura and Gibbons, none of the references teach or suggest the features of independent claim 1 of heating the film beyond its phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film, followed by supercooling the uncured cholesteric liquid crystal film beyond its phase transition temperature and applying, for curing, radiation to the uncured cholesteric liquid crystal film. The Office Action admits that Kawamoto does not teach these limitations. Further, as described above, Nishimura not only fails to teach or suggest these limitations, but teaches directly the opposite that "the light irradiation may properly be conducted after reheating the coat layer so as to impart the fluidity thereto because of the low cross-linking rate of the liquid crystal layer" (emphasis added). Rather than teaching the claim limitations, as asserted in the Office Action, Nishimura teaches directly the opposite and thus teaches away from the claimed invention. Neither Nishimura, nor Kawamoto or Gibbons, teach or suggest that light irradiation could or should be conducted when the uncured cholesteric liquid crystal film is in the supercooled state.

As Kawamoto, Nishimura, and Gibbons, alone or in combination, fails to teach or suggest each and every feature of claim 1, the cited references would not have rendered obvious the subject matter of claim 1. Claims 2-4 and 6-8 depend from claim 1 and, thus,

also would not have been rendered obvious by Nishimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

C. Kameyama, Nishimura, and Gibbons

Claims 1-8 are rejected under 35 U.S.C. §103(a) over Kameyama, in view of Nishimura, and further in view of Gibbons. Applicant respectfully traverses the rejection.

Claim 1 and Nishimura are discussed in detail above. The Office Action asserts that Kameyama discloses all of the limitations of the claimed invention, except (1) that the liquid crystal polymer is a photopolymerizable polymer which is cured at room temperature, and (2) forming a second cholesteric liquid crystal polymer layer on the cured cholesteric liquid crystal polymer layer. The Office Action then cites Nishimura as above, for teaching that it is known to cure a photopolymerizable polymer at room temperature, and cites Gibbons for teaching forming a second cholesteric liquid crystal polymer layer on the cured cholesteric liquid crystal polymer layer.

However, regardless of the actual teachings of Kameyama, Nishimura and Gibbons, none of the references teach or suggest the features of independent claim 1 of heating the film beyond its phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film, followed by supercooling the uncured cholesteric liquid crystal film beyond its phase transition temperature and applying, for curing, radiation to the uncured cholesteric liquid crystal film. The Office Action admits that Kameyama does not teach these limitations. Further, as described above, Nishimura not only fails to teach or suggest these limitations, but teaches directly the opposite that "the light irradiation may properly be conducted after reheating the coat layer so as to impart the fluidity thereto because of the low cross-linking rate of the liquid crystal layer" (emphasis added). Rather than teaching the claim limitations, as asserted in the Office Action, Nishimura teaches directly the opposite and thus teaches away from the claimed invention. Neither Nishimura, nor Kameyama or

Gibbons, teach or suggest that light irradiation could or should be conducted when the uncured cholesteric liquid crystal film is in the supercooled state.

As Kameyama, Nishimura, and Gibbons, alone or in combination, fails to teach or suggest each and every feature of claim 1, the cited references would not have rendered obvious the subject matter of claim 1. Claims 2-4 and 6-8 depend from claim 1 and, thus, also would not have been rendered obvious by Nishimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

D. Nishimura, Kawamoto, Kameyama, and Gibbons

Claims 6-8 are rejected under 35 U.S.C. §103(a) over Nishimura, in view of Kawamoto or Kameyama, and further in view of Gibbons. Applicant respectfully traverses the rejection.

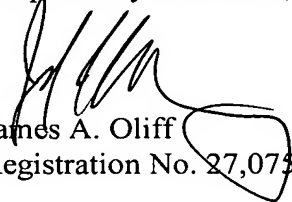
Claim 1, Nishimura, Kawamoto, Kameyama, and Gibbons are discussed in detail above. For all of the reasons set forth above, none of the references teach or suggest the features of independent claim 1 of heating the film beyond its phase transition temperature, thereby obtaining an uncured cholesteric liquid crystal film, followed by supercooling the uncured cholesteric liquid crystal film beyond its phase transition temperature and applying, for curing, radiation to the uncured cholesteric liquid crystal film. As Nishimura, Kawamoto, Kameyama, and Gibbons, alone or in combination, fails to teach or suggest each and every feature of claim 1, the cited references would not have rendered obvious the subject matter of claim 1. Claims 6-8 depend from claim 1 and, thus, also would not have been rendered obvious by Nishimura. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

IV. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the application are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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